



Designation: F3561 – 22

# Standard Test Method for Forced-Entry-Resistance of Fenestration Systems After Simulated Active Shooter Attack<sup>1</sup>

This standard is issued under the fixed designation F3561; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method sets forth the requirements and testing procedures to test forced-entry-resistant building components, construction components, and specialty security equipment. This test method is intended primarily for manufacturers to test and rate their windows, doors, modular panels, glazings, and similar products to ensure that all manufactured products meet the necessary requirements for forced-entry protection after sustaining an active shooter assault.

1.2 This test method is currently designed to simulate an active shooter weakening the system with repetitive shots followed by mechanically driven impact to simulate forced entry.

1.3 This test method is not to be used for ballistic resistant glazing rating. Test projectiles are permitted to perforate the entire specimen. The test projectile firings are intended to simulate actions taken by an assailant to aid in the ability to gain entry to a facility.

1.4 This is a laboratory test to be performed on full systems and therefore not applicable for field testing.

1.5 All tests are executed on the exterior surface of the fenestration.

1.6 Systems are required to be tested as complete units in a test frame or fielded conditions. Muller systems must be tested in the muller condition. Test results only apply to the component or system as tested. Once a system is tested and deemed to satisfy the requirements of this test method, no design change can be made without a retest except those that qualify under **Annex A1** Substitution Criteria.

1.7 Components (such as glazing, door leaves, etc.) may be tested in accordance with **Appendix X1**, receiving a capability statement for the component, but not a system rating per this standard.

1.8 Window and door systems shall be rated to at least a minimum level of Test Methods **F476**, **F588**, or **F842**, or

combinations thereof, as appropriate prior to commencing this test evaluation. This test does not dual certify to the above mentioned standards.

1.9 The values stated in this standard are SI units with the exception of the nominal descriptors for tools.

1.10 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.11 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

- A36/A36M** Specification for Carbon Structural Steel
- A574** Specification for Alloy Steel Socket-Head Cap Screws
- C719** Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
- C1036** Specification for Flat Glass
- C1048** Specification for Heat-Strengthened and Fully Tempered Flat Glass
- C1135** Test Method for Determining Tensile Adhesion Properties of Structural Sealants
- C1172** Specification for Laminated Architectural Flat Glass
- D1415** Test Method for Rubber Property—International Hardness
- D3575** Test Methods for Flexible Cellular Materials Made from Olefin Polymers
- E631** Terminology of Building Constructions
- E3062/E3062M** Specification for Indoor Ballistic Test Ranges for Small Arms and Fragmentation Testing of

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee **F12** on Security Systems and Equipment and is the direct responsibility of Subcommittee **F12.10** on Systems Products and Services.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## Ballistic-resistant Items

**F476** Test Methods for Security of Swinging Door Assemblies

**F588** Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact

**F842** Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact

**F1915** Test Methods for Glazing for Detention Facilities

### 2.2 Other Standards:

**ISO/IEC 17025:2005** General Requirements for the Competence of Testing and Calibration Laboratories<sup>3</sup>

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *component, n*—integral part of a forced entry test specimen such as: panels, frame, glazing, glazing bite, flanges, hinges, locks, jamb/wall, jamb/strike mullions, and mounting devices of different shape, size, and material.

3.1.2 *door, double, n*—two-door assembly with an opening wider than as a single door with a common latch and lock edge; may or may not include a removable mullion; openings may be asymmetrical with regard to the size of openings.

3.1.3 *door panel, n*—the swinging or sliding barrier by which an entry is closed and opened, not including framing, operating, or latching mechanisms.

3.1.4 *failure criteria, n*—any failure of the manufacturer's recommended mounting hardware or penetration of any portion of the system sufficient to permit passage of the test shape.

3.1.5 *fenestration, n*—any glazed panel, window, door, curtain wall, or skylight unit on the exterior of a building.

3.1.6 *glazing weakening, v*—intentional structural deterioration of a glazing or glazing infill.

3.1.7 *impact assault, n*—test of forced entry attack using an impactor on one dissimilar component in an attempt to create an opening and permit passage of the test shape.

3.1.8 *impactor, n*—45 kg striking mechanism capable of being deployed in a pendulum motion.

3.1.9 *independent test facility, n*—testing laboratory accredited to perform the referenced testing procedures by a nationally recognized accrediting agency in accordance with ISO/IEC 17025.

3.1.10 *mulled, n*—the physical connection together of two parts of the same system; the two systems may be anchored directly to each other or have a mullion between them.

3.1.11 *mullion, n*—a component used to divide two parts of the same system and it can be vertical or horizontal, movable or fixed; for purposes of this test method, a mullion does not include steel or concrete structural members (including seismic joints) which are present in the building.

3.1.12 *ready-to-install, n*—fabricated, with an appropriate final finish such as galvanizing, paint, or anodizing; the test

specimen shall consist of the entire fenestration assembly and contain all devices used to resist forced entry; all parts of the test specimen shall be full size, as specified for actual use, using the identical materials, details, and methods of construction.

3.1.13 *shop assembly drawing, n*—a drawing which shows how a system is assembled including the locations, dimensions, and arrangements of all assembly elements such as bolts, glazing stops, and glazing spacers.

3.1.14 *system, n*—the assembly of structural elements and devices which comprise the forced-entry-resistant barrier.

3.1.15 *test director, n*—the individual identified by the independent testing laboratory as being responsible to complete the specified tests as required and to document the results, in accordance with this test method.

3.1.16 *test facility, n*—laboratory or other area where forced-entry testing is conducted.

3.1.17 *test fixture, n*—the structural assembly which holds the test specimen.

3.1.18 *test levels, n*—the increments to which systems are tested.

3.1.19 *test plane, n*—a plane parallel and contiguous to the face of the attack side of the test sample.

3.1.20 *test projectiles, n*—projectiles or ammunition that is used to weaken the test specimen.

3.1.21 *test shape, n*—a non-compressible sphere measuring 152 mm (6 in.) in diameter.

3.1.22 *test tools, n*—the devices used by the test team during the assault tests.

3.1.23 *testing report, n*—a report provided by the test facility that includes configuration documentation, any applicable abnormality, forced-entry testing data and photographs, a certification of testing, a narrative summary of testing, time-stamped drawings that have been validated to match the test specimen, and all video recording(s) of testing.

3.1.24 *view window, n*—a window system which permits visual contact through an otherwise opaque host assembly.

3.1.25 *window frame, n*—the opaque portion of a transparent assembly into which the transparent element is mounted.

3.1.26 *yaw, n*—the angular deviation between the test projectile's axis of symmetry and its line of travel.

### 3.2 Abbreviations:

3.2.1 AN—annealed

3.2.2 C1—center 1

3.2.3 C2—center 2

3.2.4 CS—chemically strengthened

3.2.5 E—East

3.2.6 FMJ—Full Metal Jacket bullet

3.2.7 FT—fully tempered

3.2.8 ft/s—feet per second

3.2.9 ft-lbf—foot pound-force

3.2.10 H—drop height

<sup>3</sup> Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandinnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.